

HEADQUARTERS SECOND ARMY  
Office of the Commanding General  
Fort George G. Meade, Maryland

AIAOR-A 471

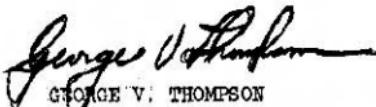
1 July 1954

SUBJECT: Operating Procedure for Handling Guided Missile Explosives  
and Propellants for NIKE I

TO: All Concerned

The inclosed Content Page and Section XIII are an addition to the  
Operating Procedure for Handling Guided Missile Explosives and Propellants  
for NIKE I.

BY COMMAND OF LIEUTENANT GENERAL PARKS:



GEORGE V. THOMPSON  
Major, ADC  
Asst Adjutant General

- 2 Incl  
1. Content Page  
2. Section XIII

DISTRIBUTION:

Hq 2d Army  
25 - Ord  
5 - Engr  
5 - IG  
3 - Med  
3 - Gl Safety  
3 - Trans  
3 - Chem  
20 - Ft Geo G Meade  
60 - 35th AAA Brigade  
40 - 53d AAA Brigade  
5 - CO, Erie Ord Depot  
5 - CG, Ft Eustis

FOR INFORMATION:

2 - Hq 1st Army  
2 - Hq 5th Army  
2 - Hq 6th Army  
2 - MDW  
2 - CO, Benicia Arsenal  
2 - CO, Ft Belvoir

# C O N T E N T S

	<u>Paragraph</u>	<u>Page</u>
SECTION I. GENERAL		
Scope.....	1	1
Classification.....	2	1
References.....	3	1
Standing Operating Procedure.....	4	1
Definitions.....	5	2
SECTION II. HANDLING		
General Procedure.....	6	5
Corrosive Liquids.....	7	5
SECTION III. STORAGE		
Main (Storage Area).....	8	6
Ready Storage.....	9	8
SECTION IV. TRANSPORTATION		
Regulations.....	10	10
Motor Vehicles.....	11	11
Safety Precautions, Personnel.....	12	11
SECTION V. OXIDIZERS		
Nitric Acid Red Fuming.....	13	11
SECTION VI. FUELS		
Aniline.....	14	15
Furfuryl Alcohol.....	15	18
Hydrocarbons.....	16	19
SECTION VII. SOLID PROPELLANTS		
General.....	17	21
Storage.....	18	22
Ignitors, Boosters and Jatos.....	19	22
SECTION VIII. SURVEILLANCE AND INSPECTION		
Aniline - Furfuryl Alcohol.....	20	23
Nitric Acid Red Fuming.....	21	24

**SECTION IX. DECONTAMINATION AND DISPOSAL**

Aniline - Furfuryl Alcohol.....	22	24
Red Fuming Nitric Acid.....	23	26

**SECTION X. PERSONNEL PROTECTION**

Protective Clothing and Equipment.....	24	26
--	----	----

**SECTION XI. FIRE PROTECTION AND FIRST AID**

Fire Prevention and Fire Procedures.....	25	27
First Aid.....	26	27
Technical Inquiry.....	27	27

**SECTION XII. TABLES**

Table I - Personnel Protective Clothing and Equipment Chart.....	28
Table II - Physical and Chemical Properties of Fuels and Oxidizers.....	29
Table 1508 - Storage Compatibility of Fuels and Oxidizers.....	30
Table 1094 - Storage Compatibility of Solid Propellants and Quantity-Distance Classes.....	30
Table 1509 - Class 150 Quantity-Distance.....	31
Table 1739 - Class 10 Quantity-Distance.....	32

**SECTION XIII. QUANTITY-DISTANCE REGULATIONS**

Safety Requirements for Nike Temporary Sites.....	28	33
Nike I Component Classification and Storage Compatibility.....	29	34
Nike I Safety Distances for Temporary Sites.....	30	34
Quantity-Distances for Nike I (Permanent) Installations.....	31	35

## SECTION XIII

### QUANTITY-DISTANCE REGULATIONS

28. Safety Requirements for Nike Temporary Sites. a. Temporary Nike sites are constructed for limited use consonant with the maximum use of existing facilities and a minimum expenditure of funds. In all temporary construction, the utmost effort must be employed to provide the necessary operational and safety requirements. Further clarification of safety requirements for Nike temporary sites are established as follows:

(1) The provisions of TM 9-1900 and ORDM 7-224 will apply for all safety determinations and quantity-distance regulations. The Nike I Missile is classed as 890 lbs of Class 10 explosive. The detailed classification of components, when stored, are shown in paragraph 29 below. The barricaded distance required, if but one missile is to be permitted at each launcher at a temporary site, is ninety (90) feet, as shown in paragraph 30 below. The barricade must be higher than the top of the missile when in a horizontal position, and the foot of the barricade not less than four (4) nor more than forty (40) feet from the launcher. Where four (4) missiles are placed on each launcher, the barricaded distance of one hundred forty (140) feet is required between launchers.

(2) The assembly of missiles, under field conditions, require approximately one-half hour per missile. Due to this short period of time, it is considered feasible to evacuate inhabited buildings, if necessary, rather than provide additional roads or construction to perform the assembly operation. There is no requirement that the assembly of the missiles be accomplished in the immediate vicinity of the launchers. The missiles can be assembled in a remote area of the installation concerned, or at another installation and transported to the launcher area. Where highway traffic would make the transportation of a fully assembled missile difficult, the missile less the jato can be assembled and transported separately to the launcher site. The joining of the jato to the missile requires only a few minutes and is the least hazardous of the assembly operations. This portion of the assembly operation will be considered as a temporary stop in the transportation of the missile to the launching position. No special safety distance will be required for this operation, although the joining area should be selected to take maximum advantage of any existing conditions where the hazards will be reduced.

(3) The fuels used in the Nike are not mutually self-igniting. It is satisfactory to perform the joining and JP fueling operations at one location, but the acid filling operation will be separated from the fuel filling operation, by a minimum of twenty (20) feet. Precautions will be taken that operations are in sequence and any spillage is removed before the next step is initiated. Under peace time conditions, only one missile is intended to be assembled at one time. (It will be noted that the missile less warhead, fuel, acid, jato and firing mechanism has no explosive content and may be stored and tested as for any electrical device).

(4) Any waivers required from the procedures outlined above, will be submitted through this headquarters to the Chief of Ordnance, Department of the Army, Washington 25, DC, Attention: ORDFA. All waivers will be prepared in accordance with the procedures established in AR 75-85, an information copy of each waiver requested will be forwarded to Commanding General, Army Antiaircraft Command, Ent Air Force Base, Colorado Springs, Colorado.

29. Nike I Component Classification and Storage Compatibility.

<u>ITEM</u>	<u>GROUP</u>	<u>EXPLOSIVE</u>	<u>CLASS</u>
a. (1) JATO IGNITOR	O	2.2	9
(2) WARHEAD INITIATOR	B	-	8
(3) PRIMA CORD	I	2.0	12
(4) ARMING MECHANISM	B	-	3
b. JATO	F	730	10
c. WARHEAD	G	153	10
d. STARTING FUEL	PD	2	150
e. ACID	PA	240	150
f. JP 4	PI	52	150

The items in each group may be stored together. Each group must be stored separately except Groups O, B and I (items listed in paragraph a above) which may be stored together provided the total explosive weight is less than 1000 pounds.

30. Nike I Safety Distances for Temporary Sites. a. Distance between launchers, same section, one missile per launcher, is 180 feet unbarriered or 90 feet barricaded.

b. Distance between launcher sections is 400 feet minimum to allow personnel to reload while adjacent section is firing.

c. Distances between operations at the joining, assembling and testing station or facility are as follows:

- (1) Joining to fueling - 170 feet
- (2) JP Fueling to nitric acid - 20 feet
- (3) Fueling to warhead insertion - 180 feet

(4) No separation required if only one missile at a time is processed, except the separation of 20 feet between the JP fueling station and the acid station. Additional components must not be brought to the site, until the assembled missile has been moved out.

(5) Explosive content of Nike I (less igniter and minor components) is as follows:

(a) JATO - 730 pounds

(b) WARHEAD - 153 pounds

TOTAL Explosives - 883 pounds

31. Quantity-Distances for Nike I (Permanent) Installations. Chief of Ordnance has furnished explosive quantity-distance requirements to Chief of Engineers, for incorporation in typical layouts for Nike I assembly and launching area. These regulations are not explicitly covered in TM 9-1900 or ORDM 7-224. New distances and interpretations conforming to these regulations were established by the Chief of Ordnance as follows:

a. General Principles.

(1) Each location, where ready missiles or explosive components are stored, assembled, serviced, or otherwise handled, unless noted below, will be at inhabited building distance, depending on the quantity-distance classification and net explosives weight, from the following:

(a) Buildings or areas not under military control, normally outside of post boundary.

(b) Buildings or areas of a military reservation which are not related to Nike I assembly or launching area.

(c) Ammunition storage or magazine areas which contain ammunition other than basic or resupply loads for Nike I. The inhabited building distance corresponding to the explosive quantity in a magazine will be used when it exceeds that corresponding to the quantity at the Nike I location.

(d) Troop housing, administrative and service (non-missile handling) facilities of Nike I battalions or batteries.

(2) Each location, where missiles containing any of the explosive components are assembled or serviced, will be separated by intraline distance from the following:

(a) Other locations of the same character involved in the assembly joining, fueling or warhead installation (similar to operating line as defined in ORDM 7-224).

(b) Locations where inert components of the missiles are assembled and tested are considered auxiliary to Nike operating lines. Such inert operations may be located at intraline distance from explosive operating lines. Also, storehouses for liquid propellant, inert related components and containers or packing material, are regarded as auxiliary buildings.

(c) Underground missile storage structures or revetted launcher sites will be located at intraline distances from acid fueling platforms. The larger quantity at the former location will govern the distance required. (Note distances are outlined on Table 1739, page 32).

b. Special Interpretations.

(1) Underground missile storage structures, in the launching area, will be separated from each other by the distances specified for hillside and underground magazines. The smallest explosive weight in Table 1742, ORDM 7-224, is 20,000 pounds, while the weight of Nike storage is about 5,000 pounds. In the interest of reducing land requirements, the separation of the nearest points of the structures may be reduced to 80 feet, which will result in maintenance of the 100 foot distance required by Table 1742. This distance will be measured between actual locations of the explosives rather than the storage structures.

(2) The underground missile storage structure will be separated from the installation boundary and inhabited buildings, by a distance not less than one-fourth of the unbarricaded inhabited building distance. This is an extension of the principal used for magazine distances in Table 1742, to the range of inhabited building distances.

(3) The distances between launcher sections, in revetted above ground launching, is based on permitting exposed personnel at one section to work while an adjacent section is launching a missile. It is not based on explosive quantity-distances.

(4) Acid fueling platforms, in launching areas, will not necessarily be at inhabited building distance (unbarricaded or barricaded) from the boundary of the launching area, but a barricade will be interposed between the fueling platform and the boundary.